Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

Review of the Commission's Rules Governing the 896-901/935-940 MHz Band	)))	WT Docket No. 17-200

REPLY COMMENTS OF THE UTILITIES TECHNOLOGY COUNCIL

Utilities Technology Council

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SUMMARY

UTC submits these reply comments to reiterate its support for the Commission's proposal to realign the 900 MHz band into a 3/3 MHz broadband segment and a 1.5/1.5 MHz narrowband segment together with a .5/.5 MHz guard band to separate the broadband segment from the Narrowband PCS band. At the same time, UTC emphasizes that narrowband systems must be protected from interference and must be provided with relocation to comparable facilities and full reimbursement for their relocation costs.

Utility comments on the record are divided between support for and opposition to the 900 MHz realignment. Some utilities that support realignment of the 900 MHz band would also prefer that the Commission provide access to broadband spectrum in another band. All utilities that support the realignment of the 900 MHz band agree that narrowband systems also must be protected against interference. Some utilities support going straight to a 5/5 MHz configuration in areas where there are no incumbents or adjacent licensee opposition. Many utilities support either gradually realigning the band or refraining entirely from realignment. These utilities underscore the continued criticality of narrowband systems used for mission critical communications including emergency response, such as in the aftermath of hurricanes, ice storms, fires, flooding, and other natural or man-made disasters. Some of these utilities share their 900 MHz systems with public safety entities, further underscoring the importance of protecting them against interference.

Although utilities are divided about 900 MHz realignment, they agree that they need access to broadband because their communications needs are increasing. They also agree that utilities should be eligible to become broadband licensees. Utilities universally agree that

commercial wireless service providers are not a viable solution to support utility communications requirements. Additionally, utilities agree that they lack access to the licensed broadband spectrum they need and that if the 900 MHz band is realigned, the Commission should provide priority access to the broadband segment by utilities. Finally, utilities all support a voluntary market based approach for negotiation of relocation.

In sum, the record suggests that the NPRM has great potential, but the Commission should change the proposed rules in order to maximize the public interest benefits that can be gained by realigning the 900 MHz band while protecting narrowband systems and preserving their ability to expand in the future. First and foremost, the Commission needs to change its proposed eligibility rules so that it promotes the opportunity for utilities to become broadband licensees. Second, the rulemaking needs to clarify the relocation process, especially the conditions triggering mandatory relocation and the terms under which the exclusion for complex systems would apply by lowering the threshold for complex systems to 25 sites or systems that meet certain public interest criteria, such as supporting public safety communications or protecting nuclear power plants. The use of a 25 site threshold will also provide more free-market opportunity as some large system narrowband operators may opt in the future to convert portions of their systems to broadband. In that regard, the Commission needs to establish safeguards to prevent abuse of the process by which broadband licensees invoke mandatory relocation. Finally, the Commission needs to ensure that "covered incumbents" are effectively protected against unacceptable interference and that they are relocated to comparable facilities and provided full reimbursement for their relocation costs and for stranded investment.

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Pursuant to Section 1.405 of the Commission's Rules, the Utilities Technology Council ("UTC") hereby files its reply comments in response to the Commission's Notice of Proposed Rulemaking in the above-referenced proceeding.[1] The comments on the record support both the need for broadband and the need to protect incumbent narrowband systems in the 900 MHz band. Specifically, comments generally support the Commission's proposals for a broadband segment size using a 3/3 MHz configuration. They also support adopting technical rules to protect narrowband systems against interference. Finally, they support the Commission's proposed voluntary, market-based approach to negotiated relocation, although some also believe that mandatory relocation may be necessary for hold-outs. Even those comments that support mandatory relocation agree that it should be conducted after a voluntary approach and that exceptions should apply for complex systems or systems that meet certain public interest criteria, such as supporting public safety operations or nuclear generating stations.

While there is general support for the basic issues in the Commission's proposals for the 900 MHz realignment, the comments urge the Commission to change its proposals in several important respects. Specifically, the comments strongly emphasize the need to change the

[1] Review of the Commission's Rules Governing the 896-901/935-940 MHz Band, *Notice of Proposed Rulemaking*, WT Docket No. 17-200 (Mar. 14, 2019)(hereinafter "*NPRM*").

proposed rules for eligibility so that B/ILT entities –namely utilities -- may become broadband licensees and that the process does not unfairly favor SMR entities to the exclusion of others. The comments also express strong concerns about the potential that mandatory relocation could be misused to undercut or subvert the negotiations for voluntary relocation. Moreover, the comments on the record urge the Commission to provide much more detail about the cost reimbursement requirements that would go along with any mandatory relocation process. Several utilities also commented that the Commission should lift the current licensing freeze on a limited basis in order to allow incumbent licensees to expand their existing systems, consistent with a pending petition by UTC. Lastly, the comments also urge the Commission to provide greater interference protection to narrowband systems than what is proposed in the NPRM. In sum, the comments on the record generally question how --but not if -- the Commission should realign the 900 MHz band.

These comments are consistent with those of UTC. Accordingly, UTC reiterates its support for eligibility rules that promote utility access to the broadband segment of the band and provide priority for utilities to access available channels in the narrowband segment. UTC also reiterates its support for the voluntary, market-based approach for relocation, and urges the Commission to limit mandatory relocation, including but not limited to excluding complex systems that consist of 25 or more sites in contiguous or non-contiguous areas or that otherwise meet public interest criteria. UTC also urges the Commission to ensure that incumbent licensees are provided comparable facilities and full cost recovery for relocation, including stranded investment costs. UTC also reiterates its request that the Commission limit the effectiveness of its licensing freeze in order to allow incumbent licensees to expand existing systems. Finally, UTC reiterates that the Commission should adopt technical rules that provide greater protection

against co-channel and adjacent channel interference to narrowband systems from broadband operations, including applying the definition of "unacceptable interference" under the Commission's rules for systems in the 800 MHz band to incumbents in the 900 MHz band as well as allowing deployment of a 1.4/1.4 MHz configuration within a 3/3 MHz broadband segment or developing other innovative solutions to sufficiently protect narrowband systems against interference.

I. Broadband Segment Size

The comments on the record generally support the Commission's proposal to adopt a 3/3 MHz broadband segment size.[2] To be sure, there are some comments that support a narrower bandwidth configuration of 1.4/1.4 MHz.[3] At the other end of the extreme, there are some comments that support a 5/5 MHz configuration.[4] There are also some utilities that do not support a 3/3 MHz broadband segment size.[5] But, even those that are opposed to realignment

[2] *See e.g.* Comments of Duke Energy in WT Docket No. 17-200 at 8 (filed June 3, 2019)(Duke "agrees that providing a 3/3 MHz broadband segment could provide energy utilities with much-needed broadband spectrum."); Comments of Hawaiian Electric Company in WT Docket No. 17-200 at 3 (filed June 3, 2019)(stating that "[t]he Hawaiian Electric Companies support the designation of 3 + 3 MHz channel in the 900 MHz Band."); *and* Comments of Sensus in WT Docket No. 17-200 at 3 (filed June 3, 2019)("Sensus Supports the Commission's 3/3 Megahertz Proposal").

[3] *See* Comments of Los Angeles Department of Water & Power in WT Docket No. 17-200 at 7 (filed June 3, 2019)(emphasizing that "[a] 1.4/1.4 MHz Broadband Allocation Is the Best Starting Point"). *See also* Comments of Southern California Edison in WT Docket No. 17-200 at 6 (filed June 3, 2019)(stating that "[i]n order to expedite the rollout of broadband in these situations, therefore, the FCC should allow an interim 1.4 x 1.4 MHz channel deployment within the proposed 3 x 3 MHz broadband segment which the licensee could clear earlier to start operations.")

[4] *See* Comments of PDV Wireless, Inc. in WT Docket No. 17-200 at 10 (filed May 30, 2019)(urging the Commission to provide a 5/5 megahertz option under the rules that in the short term would be limited to "areas where there are a small number of licensees with significant spectrum positions.") *See also* Comments of Southern Company Services, Inc. in WT Docket No. 17-200 at 1-2, 4 and 6 (supporting a 5/5 configuration in areas where "(1) there are no issues of incumbency or incumbent opposition, and (2) such operations are not opposed by incumbents in adjacent areas.")

[5] *See e.g.* Comments of the Critical Infrastructure Coalition in WT Docket No. 17-200 at 5 (filed June 3, 2019)(" the record lacks support for the speculation that the small proposed 3/3 MHz broadband segment within the 900 MHz band can provide the services needed by this industry."); Comments of Lower Colorado River Authority in WT Docket No. 17-200 at 6 (filed June 3, 2019)(hereinafter, "Comments of LCRA")(stating "[a]lthough there may be

acknowledge that 3/3 MHz is a good option for realignment, both in terms of providing sufficient bandwidth to support utility capacity requirements and in terms of protecting narrowband systems and preserving opportunities for future capacity requirements. Some comments on the record, including UTC's acknowledge that while the Commission should allocate a 3/3 MHz broadband segment, there may be some areas where the Commission should allow broadband licensees to choose to deploy a 1.4/1.4 MHz configuration. Additionally, some comments on the record recommend going straight to a 5/5 MHz configuration of the 900 MHz band in areas where there are no incumbent or adjacent licensee's objections.

Based on the comments on the record, including those by UTC, the Commission should adopt a broadband segment size using a 3/3 MHz configuration. Even though this would by all accounts provide limited bandwidth – certainly insufficient for consumer-based services – it would help to support the increasing communications needs of utilities and other critical infrastructure industry (CII) entities. The comments by utilities and other CII universally agree that they lack sufficient access to licensed broadband spectrum, which they need to provide wide-area, higher capacity, and highly reliable communications. Although UTC and utilities have commented that more broadband spectrum in other bands would be better, realigning the 900 MHz band to support a 3/3 MHz broadband segment configuration represents a good option only if the Commission offers sufficient spectrum in the narrowband segment for utilities and CII and other B/ILT entities to meet their current and future needs and protects them against

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some limited use cases for utilities to operate in a 3/3 MHz broadband segment, the Commission's proposed realignment of the 900 MHz band will not help LCRA meet its current and future broadband needs.") *and* Comments of Nextera at 12 in WT Docket No. 17-200 (filed June 3, 2019)("While critical infrastructure industry entities need new broadband spectrum for their operations, the small amount of broadband service gained under the 3/3 megahertz proposal would not offset the negative cost-benefits summarized above, including the disruption that would be caused by rebanding, the need for a guardband between the broadband and narrowband segments, the reduction of available channels for future narrowband growth, and the likelihood of interference among the users in the compressed narrowband segments.")

interference from broadband operations. It would provide greater capacity than utilities currently have using narrowband channels or using a 1.4/1.4 MHz configuration. It would provide wide-area coverage because the 900 MHz band propagates well generally. It would leverage commercially available standardized equipment and existing infrastructure to help keep costs down and promote broadband deployment and interoperability. Last but not least, it would leave available spectrum to accommodate relocation of incumbents within the band.

UTC continues to urge the Commission to provide flexibility to allow broadband licensees to adopt a 1.4/1.4 MHz configuration within the 3/3 MHz broadband segment. As several of the comments acknowledge, there are several potential benefits from using a 1.4/1.4 MHz configuration. First and foremost, it enables broadband licensees to better avoid the potential for co-channel or adjacent channel interference with narrowband systems. Additionally, broadband licensees could gradually increase capacity when and where necessary, based on market demand, and systems can be reprogrammed to operate on wider channels relatively easily. Finally, it also enables utilities and others to leverage commercially available standardized equipment and existing infrastructure. For all of these reasons, UTC supports the comments on the record – including those by UTC – that urge the Commission to permit broadband licensees to deploy a 1.4/1.4 MHz configuration within the 3/3 MHz broadband segment.

II. Allocation of the 900 MHz Band

The comments on the record generally support the Commission's proposal to adopt Part 27 flexible rules for the broadband segment, but some comments urge the Commission to maintain applying the Part 90 rules for narrowband systems and possibly the broadband systems as well. These comments generally agree with the comments by UTC that the proposed

framework would satisfy the three-part test laid out under section 303(y) of the Communications Act. Specifically, the allocation would promote access to broadband spectrum for private land mobile operations, including utility communications networks. Second, provided that the Commission's rules protect narrowband incumbents in and adjacent to the 900 MHz band, the allocation would not deter investment in communications services and systems, or development of technologies. Third, the 3/3 broadband segment can be implemented in such a way that it would not result in harmful interference among users, as described in further detail herein.[6] UTC reiterates that Part 27 flexibility should allow broadband systems to deploy narrower 1.4/1.4 MHz configurations in areas where it may not be appropriate to deploy a 3/3 MHz broadband system due to the presence of large and complex narrowband systems.

That said, UTC does not oppose and actually would support comments on the record that urge the Commission to continue to apply the Part 90 rules for narrowband systems, as well as possibly to apply the Part 90 rules to broadband systems. As Duke Energy explained in its comments, retaining the Part 90 rules for narrowband systems would provide regulatory certainty.[7] Moreover, if the Commission adopted the Part 90 rules for the broadband segment as well as the narrowband segment, as LCRA explained it would ensure that "broadband licenses and narrowband incumbents in the 900 MHz band would operating under a single set of rules."[8] As LCRA further explained, applying the Part 27 rules to the proposed broadband segment within the 900 MHz band could result in disputes involving an issue not specifically identified for the 900 MHz band defaulting instead to rules specified for other commercial cellular bands.

[6] *See* Section 303(y) of the Communications Act of 1934 as amended, requiring that the Commission find that (1) the allocation is in the public interest; (2) the allocation does not deter investment in communications services and systems, or development of technologies; and (3) such use would not result in harmful interference among users.

[7] Comments of Duke Energy at 14.

[8] Comments of LCRA at 21.

For these reasons, UTC does not oppose applying the Part 90 rules to the narrowband or even the broadband segment of the band.

III. The Location of the Broadband Segment

The comments on the record also generally support the Commission's proposal to designate 897.5-900.5 MHz/936.5-939.5 MHz as the broadband segment, leaving two separate narrowband segments: a 1.5/1.5 megahertz segment (896-897.5/935-936.5 MHz) below the broadband segment and a .5/.5 megahertz segment (900.5-901/939.5-940 MHz) above the broadband segment.[9] However, one utility – First Energy – commented that the proposed location of the broadband segment threatens to cause front-end overload to receivers. In that regard, First Energy has suggested a way to mitigate the potential interference by inverting the base station and subscriber transit and receive channels.[10] UTC urges the Commission to consider this potential problem with the proposed location of the band. Accordingly, UTC reiterates its support for the Commission's proposed location of the broadband segment.

UTC continues to believe that the Commission should adopt its proposal for a consistent 3/3 MHz segmentation that would promote the use of the band for broadband while also protecting narrowband systems from interference. As discussed above with regard to the size of the broadband segment, UTC also recommends that the Commission permit broadband licensees with the option to deploy systems in a 1.4/1.4 MHz configuration within the 3/3 MHz broadband segment. Furthermore, UTC recommends that this segmentation should be made on a regional rather than on a national basis, which would be consistent with the way systems using the broadband segment would likely be deployed as a practical matter. This would provide the

[9] *NPRM* at ¶15.

[10] Comments of First Energy at 6-8.

added benefit of preserving spectrum for narrowband operations on a regional basis where a broadband licensee decides to use a 1.4/1.4 MHz configuration or where no broadband licensee chooses to deploy a system at all.

UTC also reiterates its support for the Commission's proposal to provide frequency separation between the broadband segment and operations on the Narrowband PCS channels that are adjacent to the 900 MHz band. In that regard, UTC reiterates that the amount of frequency separation should be no less than 500 kHz to protect against co-channel interference to operations on the Narrowband PCS channels. Comments on the record also support the establishment of such a guard band to protect against adjacent channel interference to operations on the Narrowband PCS channels, including many large and important utility systems.

Similarly, UTC also reiterates its support for providing where possible 500 kilohertz of frequency separation between the broadband segment and the narrowband segment within the 900 MHz band. While the Commission's proposal does not provide any separation between the narrowband and broadband segments within the 900 MHz band, UTC submits that sufficient frequency separation between the segments could be carved out where a broadband licensee chooses to deploy a 1.4/1.4 MHz configuration of the broadband segment. UTC urges the Commission to allow broadband licensees to do so, where possible. Furthermore, UTC also urges the Commission to adopt innovative solutions to provide protection against adjacent channel interference between the narrowband and broadband segments, even when there is no available frequency separation between the bands.[11] Finally, UTC reiterates that the Commission

[11] If a broadband licensee decides to deploy two 1.4/1.4 channels together in the 3/3 MHz broadband segment, there would not be sufficient space for a 500 kHz frequency separation from the narrowband segment. In such a circumstance, the 500 kHz frequency separation would not apply, but UTC reiterates that the Commission should consider innovative solutions to protect against adjacent channel interference to operations in the narrowband segment.

should limit eligibility to available narrowband channels to B/ILT entities exclusively and provide utilities and other CII with priority access to those channels -- in order to provide sufficient access to interference spectrum for the relocation of incumbent narrowband systems, as described in more detail below.

Therefore, UTC reiterates that it supports the Commission's proposal for a consistent 3/3 MHz segmentation approach to realigning the band in general, which would benefit utilities by helping them meet their broadband needs -- provided that the Commission offers sufficient spectrum in the narrowband segment for utilities and CII and other B/ILT entities to meet their current and future needs and protects them against interference from broadband operations.[12] Consistent with the comments on the record, utilities and other CII continue to rely on narrowband private internal radio communications systems for mission-critical operations, but at the same time, they need additional wideband or broadband spectrum to meet their increasing communications capacity requirements.[13] Given the importance of the essential energy and water services that utilities and oil and natural gas companies provide, UTC urges the Commission to promote the ability of these types of critical infrastructure industry entities to access broadband spectrum in the 900 MHz band, while protecting their existing narrowband operations against disruption during relocation, as further described below.

[12] *See NPRM* at ¶18 (requesting comment on "the extent to which our proposal would benefit current narrowband users by helping them meet their broadband needs.")

[13] *Id.* (stating that "Electric and other utilities need broadband capacity to support smart grid and other next generation communications systems."). *See also Id., citing* Comments of Western Farmers Electric Cooperative (finding that after conducting an 18-month engineering study to assess its long-term telecommunications requirements, Western Farmers Electric Cooperative concluded that its future needs cannot be met by traditional networks that lack broadband capacity.)

IV. Newly Designated Narrowband Segment.

UTC continues to urge the Commission to provide utilities, oil and gas companies, water utilities and other CII that must relocate to the narrowband segment of the band with priority access to available channels in a given area. As UTC explained in its initial comments, this will ensure that they have access to available spectrum so that any disruption to their systems during relocation is minimized. Numerous comments support reserving the narrowband spectrum for utilities and CII on either an exclusive or priority access basis. Providing utilities and CII with priority access to available narrowband channels will serve the public interest in ensuring the safe, reliable and secure delivery of the underlying essential energy and water services that utilities and oil and gas companies provide. In addition, providing priority access for utilities and CII is consistent with the FCC's 800 MHz rebanding rules, which provided them with priority access to available 800 MHz narrowband channels. In that regard, UTC continues to urge the Commission to use the same definition of CII that it developed for 800 MHz rebanding.[14] UTC opposes the comments of the Enterprise Wireless Alliance (EWA) which urge the Commission to adopt a broader definition of CII.[15] UTC believes that the existing definition of CII is narrowly tailored and appropriate for the 900 MHz band, just as it was for the 800 MHz band. Context matters too. Whereas EWA seeks to broaden the definition of CII for purposes of eligibility in the proposed broadband segment of the 900 MHz band, UTC is suggesting using the existing definition of CII for purposes of providing priority access to channels in the narrowband

[14] *See* 47 C.F.R §90.7 (defining "Critical Infrastructure Industry (CII)" as "[s]tate, local government and non-government entities, including utilities, railroads, metropolitan transit systems, pipelines, private ambulances, volunteer fire departments, and not-for-profit organizations that offer emergency road services, providing private internal radio services provided these private internal radio services are used to protect safety of life, health, or property; and are not made commercially available to the public.")

[15] *See* Comments of the Enterprise Wireless Alliance in WT Docket No. 17-200 at 3 (urging the Commission to adopt a definition of CII that would include "transportation (for example, airlines and trucking operations in addition to railroads), critical manufacturing, food and agriculture, financial services, and [other] commercial facilities…").

segment. UTC is concerned that using the broader definition of CII for purposes of access to the narrowband segment as EWA suggests would defeat the purpose of the rule and would be difficult to apply as a practical matter. Accordingly, UTC urges the Commission to provide priority access for CII to relocate incumbent systems to available narrowband channels in the 900 MHz band.

UTC also echoes the comments on the record that support limiting eligibility to 900 MHz narrowband channels exclusively to B/ILT entities. UTC agrees with these comments that there will be insufficient spectrum available in the narrowband segment to complete relocation. In addition, UTC agrees with these comments that there is significant potential for speculation and warehousing of the narrowband segment by SMRs, if they are eligible for narrowband channels. By limiting eligibility exclusively to B/ILT entities, the Commission would complement the approach of providing priority access to narrowband channels for utilities and CII (as described above), and would serve the public interest by ensuring sufficient access to spectrum to ensure the safe, reliable and secure delivery of essential electric, gas and water services as well as other critical transport and petroleum services.[16]

As UTC and others explained in their comments, reserving the narrowband channels for B/ILT entities and providing priority access for utilities and other CII would help to ensure sufficient spectrum is made available for relocation of incumbents. Recent experience in the 800 MHz band has shown that speculation for narrowband channels – especially in major markets – is a real problem. Allowing SMR entities access to narrowband channels in the 900 MHz band

[16] *See* Joint Comments of the American Petroleum Institute and the Energy Telecommunications and Electrical Association in WT Docket No. 17-200 at 5 (filed June 3, 2019)(stating that API and ENTELEC do not support allowing SMR eligible to license B/ILT channels); Comments of LCRA at 22 ("LCRA submits that eligibility for the newly designated narrowband segments should be limited to B/ILT entities.").

will certainly result in the depletion of narrowband channels due to spectrum warehousing, leaving nothing for incumbent licensees for relocation. As UTC suggested in its comments, the 800 MHz band could serve to provide green space for SMR entities to seek narrowband channels for relocation.[17] For all of these reasons, UTC continues to urge the Commission to limit eligibility exclusively to B/ILT licensees to access the narrowband segment of the 900 MHz band.

Finally, UTC supports other potential rule changes for the narrowband segment that were raised in comments on the record. Specifically, UTC supports the comments that urge the Commission to lift the current licensing freeze in order to allow incumbent licensees to expand their systems as necessary, consistent with the pending petition that UTC filed with the Commission last year.[18] UTC also supports the comments requesting the Commission to consider rule changes designed to provide sufficient frequency separation between narrowband systems to allow incumbents to continue to use frequency combiners without having to change

[17] UTC notes that the 800 MHz Expansion Band and Guard Band channels are subject to higher levels of potential interference, and would not serve as appropriate channels to relocate utility and CII narrowband 900 MHz systems, which must remain reliable given the mission critical nature of their communications.

[18] *See* Petition for Reconsideration or Clarification of the Utilities Technology Council, WT Docket No. 17-200 (filed Oct. 28, 2018)(seeking reconsideration or clarification from the Commission that the freeze "would only apply to applications by entities that are not affiliated with current licensees in the 900 MHz band (i.e., non-incumbents)."). *See also* Comments of Oncor Electric Delivery in WT Docket No. 17-200 at iii, 2, and 14 (filed June 3, 2019)(stating that "the Commission should modify its freeze on new and modified licenses to permit 900 MHz licensees, particularly those in critical infrastructure industries, to expand or modify their networks to address new communications requirements."); Comments of LCRA at ii and 14 (stating "[i]n those areas with a complex narrowband system, the Commission should lift the freeze on 900 MHz license applications to enable complex system licensees to apply for new sites or modify existing sites to expand their systems"); Comments of Southern Company Services, Inc. at 7 (stating that "this freeze should be modified to apply only to applications by entities who are not affiliated with current incumbent licensees in the 900 MHz band."). *See also* Comments of JVCKenwood USA Corporation in WT Docket No. 17-200 at 12 (filed June 3, 2019)(stating "[i]nstead of proceeding with the instant proposal, the Commission should instead remove the freeze on new and modified 900 MHz narrowband systems; accept applications for such and allow the band to develop for a few years without regulatory preclusion, and then, after a period of years, reassess the relative need for narrowband and broadband operation in the 10 megahertz of spectrum at 900 MHz after the United States implements 5G technology at 3.7 GHz.")

them out or otherwise alter their operation.[19] UTC also supports comments raising concerns about the increase in the noise floor that may result from either co-channel or adjacent channel systems.[20] Finally, UTC reiterates that the Commission should continue to monitor developments in the proposed narrowband segment of the band to determine if other changes to the technical rules become necessary to address the potential for interference that may occur between narrowband systems, as well as interference between adjacent broadband and narrowband operations.

V. Geographic Area Licensing.

Comments on the record support county based size geographic licenses.[21] As UPS explained in its comments, "County-by-county licensing, or smaller license areas, would tend to make such secondary, spectrum-efficiency-maximizing transactions more practical than large license areas, where an entity's narrowband needs might only cover a very small portion of the spectrum license area. Smaller license-areas also would tend to foster more competitive bidding

[19] *See* Comments of LCRA at 4 and Comments of First Energy at 8 ("closer separation between allotted channels in a multi-channel configuration. This can require replacement of combiners at fixed sites."). Generally, combiners require a minimum frequency separation of 100 kHz between transmit and receive channels, which may be difficult to achieve if only 1.5 MHz is available in the narrowband segment of the 900 MHz band. *See*, Holmes, Wayne, "Choosing Frequencies and RF Filtering Equipment" (2013) *available at* https://cwh050.blogspot.com/2013/04/choosing-frequencies-and-rf-filtering.html.

[20] Gillespie Prudhon & Associates, Inc., "900 MHz NOI Proposed Rebanding: Engineering Report, 900 MHz LMR Spectrum Issues with Repurposing," WT Docket No. 17-200 *available at* https://ecfsapi.fcc.gov/file/109211865122815/GP%26A%20Report%20for%20NextEra%20092118-c1.pdf. (describing how additional sites would be required to provide the same coverage necessary to overcome the rise in the noise floor resulting from compressing narrowband systems into the narrowband segment of the band.)

[21] *See e.g.* Comments of LCRA at 24 ("If the Commission realigns the 900 MHz band to create a broadband option, LCRA supports geographic area licensing for the broadband segment based on counties."); Comments of United Parcel Service (UPS) in WT Docket No. 17-200 (filed June 3, 2019)(hereinafter, "Comments of UPS")(stating "UPS supports licensing on a county-by-county or smaller geographic area basis (e.g., census tracts)."); Comments of Duke Energy at 13 ("Duke Energy supports the concept of licensing the broadband segment on a geographic area basis with the licensing areas being defined as counties or county equivalents."); and Comments of Southern California Edison at 11 ("SCE supports county-based broadband licenses rather than larger areas such as MTAs.")

for licenses."[22] These comments are consistent with those of UTC, which opposed using larger geographic areas (*i.e.* compared to counties), which would make it more difficult for utilities to acquire licenses and to work around incumbent narrowband systems.[23]

VI. A Market-Driven, Voluntary Exchange Process

A. The Commission Should Adopt its Proposal for a Voluntary Relocation Process and Mandatory Relocation Should be Limited and Exclude Complex Systems.

Comments on the record overwhelmingly support the Commission's proposed market-driven, voluntary exchange process for the transition.[24] Comments were split however on whether to allow for mandatory relocation of "hold-outs"; with some supporting mandatory relocation as necessary and others opposing it as dangerous. Those that support mandatory relocation such as Southern Company believe that it should only be used after a finite period of

[22] Comments of UPS at 7.

[23] Comments of UTC at 15.

[24] *Id.* at ¶26-27. *See also* Comments of Alliant Energy in WT Docket No. 17-200 at 2 (filed June 3, 2019)(stating that Alliant Energy supports the Commission's market-driven voluntary exchange process proposal, rather than any mandatory process."); Comments of Motorola Solutions in WT Docket No. 17-200 at 2 (stating "Motorola Solutions supports the Commission's preferred plan to transition to a new band alignment through a market-driven voluntary exchange process."); Comments of Oncor Electric Delivery at 4 (emphasizing that "The Commission Should Facilitate the Realignment of the 900 MHz Band Solely Through Voluntary Negotiations Between Incumbent Licensees and Broadband Applicants"); Comments of Critical Infrastructure Coalition at 6 ("CIC opposes any mandatory relocation mechanism that would both interfere with the free market and potentially jeopardize critical infrastructure communications"); NextEra Comments at 7 ("The participants in each market should make a truly voluntary decision based on their individualized circumstances."); Comments of LCRA at 16 ("LCRA agrees that the Commission should rely on a market-driven, voluntary exchange process for relocation of the 900 MHz band. LCRA opposes the use of mandatory relocation alternatives in conjunction with a voluntary exchange process, especially for complex systems."); Comments of FirstEnergy Corp. in WT Docket No. 17-200 at 9 (filed June 3, 2019) (stating that it "strongly believes voluntary relocation is the only acceptable method of relocating incumbents.") *and* Comments of Southern California Edison at 11 (stating that "SCE supports the Commission's proposal to allow a period of voluntary negotiation whereby eligible entities can attempt to clear incumbents from the 900 MHz band by a combination of relocation or buyout agreements with other incumbents, return of spectrum to the Commission, and release of spectrum held by the Commission from inventory.")

voluntary negotiations.[25] Some comments support a two-year voluntary negotiation period.[26] Those that oppose mandatory relocation such as Oncor Electric Delivery argue that it will "undercut the incentive of all parties to reach voluntary agreements that are fair and equitable to all parties."[27]

While UTC supports the Commission's proposal to rely on voluntary relocation, it shares the concerns expressed in comments on the record about mandatory relocation. Voluntary relocation has the twin advantages of 1) promoting faster realignment of the band through privately negotiated agreements, between incumbents, and 2) minimizing disruption of incumbent systems in the band.[28] By contrast, the specter of mandatory relocation may fundamentally alter the voluntary negotiation process, making it "voluntary in name only."[29] The Commission should limit the extent to which a broadband licensee may invoke mandatory relocation. For example, and consistent with UTC's comments and other comments on the record, the Commission should revise the exclusion for complex systems, so that it would apply to systems with 25 or more sites in contiguous or non-contiguous areas or that meet certain

[25] Comments of Southern Company ("Southern Company recommends a finite period for the voluntary exchange process that provides a reasonable amount of time for negotiations and the conclusion of an agreement, after which some form of mandatory relocation may be appropriate in order to mitigate against the holdout problem and ensure an efficient and complete transition process.").

[26] *See e.g.* Comments of Southern California Edison at 11 ("SCE further supports the two year time period proposed by the Commission to accomplish this process, since in some markets like greater Los Angeles, there are many individual B/ILT licensees who will need to be cleared.")

[27] Comments of Oncor at ii and 6 (adding that "[s]uch a process would be voluntary in name only in that all narrowband licensees would be compelled to accept potentially unfavorable negotiated agreements early in the process rather than hold out for an equitable relocation agreement and thereby risk being forced into the mandatory process.")

[28] *Id.* at ¶26.

[29] Comments of Oncor at 6.

public interest criteria, such as supporting public safety communications or protecting nuclear power plants.[30]

B. The Commission Must Ensure Relocation to Comparable Facilities and Cost Reimbursement.

In any event, UTC reiterates that incumbents must be provided comparable facilities and reimbursement for their relocation costs by the broadband licensee. Comments on the record also emphasize this point.[31] These comments suggest that comparable facilities should include additional sites and frequencies necessary to ensure that the new system provides at least the same coverage and capacity as the incumbent's old system. UTC submits that the Commission's current rules for comparable facilities in the 800 MHz band should be adopted to define comparable facilities in the 900 MHz band, as well.[32] That way if the new system required additional sites or frequencies to provide the same coverage and capacity as the old system, the incumbent would be entitled to them under the rules. That would also provide regulatory certainty to the process, which would reduce disputes and accelerate the transition. Finally, this would be consistent with the Commission's proposal to require that the spectrum the prospective

[30] *See* Comments of UTC at 21-22 (suggesting a possible definition for complex systems that would include both quantitative and qualitative criteria); Comments of Critical Infrastructure Coalition at 8-9 ("At a minimum, any threshold for determining a complex system should include all the sites and channels used by a licensee across interoperable networks, regardless of geographic continuity; and the number of sites to be considered eligible as a complex system should be no more than 25."); Comments of LCRA at 10-14 ("Contrary to the proposed definition contained in the 900 MHz *NPRM*, the Commission should adopt a definition of "complex" systems that includes (1) any system with 25 or more integrated 900 MHz sites; (2) any system that is shared by the B/ILT licensee with public safety users or other eligible entities pursuant to Section 90.179; or (3) any system that is authorized for an extended implementation period pursuant to Section 90.629.") (citations omitted); Comments of NextEra at 20-22 ("NextEra agrees that certain markets that are extensively used by narrowband incumbents for critical communications should not be subject to the uncertainty of potential reconfiguration and relocation. The number of sites to trigger the exclusion, however, should be reduced to 25.").

[31] Comments of Ameren at 5 ("Ameren believes that all retuning costs should be borne by the broadband licensee and all incumbents should be dealt with fairly and provided with comparable facilities if they choose to remain narrowband operators in the band.")

[32] *See* 47 C.F.R. § 90.699 (defining comparable facilities based upon a functional approach that accounts for the capacity, quality and operating cost of the system).

broadband licensee offers for the purposes of relocation does not exceed the incumbent's current spectrum holdings in the county, *except where doing so is necessary to achieve equivalent coverage and/or capacity*.[33]

C. The Commission Should Adopt Eligibility Rules to Promote Utility Access to Broadband Segment Spectrum.

UTC also joins the opposition on the record to the Commission's proposed eligibility requirements.[34] In numerous comments, utilities expressed strong interest in becoming eligible to become broadband licensees.[35] They expressed concern that the proposed rules for eligibility would leave utilities dependent upon a third party provider,[36] and that the eligibility rules would result in a huge windfall for SMR licensees.[37] UTC agrees that, "use of the 3/3 MHz broadband

[33] *NPRM* at ¶36.

[34] *Id.* at ¶29 (proposing to require that broadband license applicants (1) Hold licenses covering the entire county for all 20 geographically-licensed SMR blocks, (2) Reach an agreement to clear from the broadband segment, or demonstrate how it will protect, all covered incumbent licensees, and (3) Agree to return to the Commission all 900 MHz licenses for the relevant county, including any site-based B/ILT or SMR licenses.)

[35] *See e.g.* Comments of Hawaiian Electric Company at 5 (stating that "[t]here is no reason why public utilities should be denied access to 21st century tools and resources to cope with these challenges just because they did not previously use 900 MHz Band spectrum."); Comments of Duke Energy at 14 ("Duke Energy encourages the Commission to limit eligibility of prospective broadband license holders in the 3/3 MHz broadband spectrum and the services derived from it to the current PLMR incumbents "); Comments of LCRA at 19 ("LCRA therefore supports the Commission's alternative proposal that any licensee could use a combination of 900 MHz spectrum to be eligible for a new broadband licensee.") *See also Id.* (adding that "the option that would most directly meet the current and future broadband needs of incumbent utilities is to allow utilities to deploy private broadband networks within the 900 MHz band under their own licenses, which they could share with other B/ILT."); and Comments of Southern California Edison at 7-10 (opposing the FCC's proposal for eligibility which "effectively limits eligibility for the broadband license as a practical matter to a single company, pdv wireless.") *See also Id.* at 10 (stating that "Just as eligibility should not be limited to one large incumbent, it should be expansive enough to embrace all incumbents who currently own spectrum in the band," and adding that given the high-level importance of grid modernization in the decade ahead, all utilities that hold 900 MHz Band spectrum should have the opportunity to acquire broadband licenses.")

[36] Comments of LCRA at 15; *and* Comments of Hawaiian Electric Company at 5 ("It is very important that current SMR licensees do not gain a monopolistic position in any market, including Hawaii. Otherwise, this will result in only one entity being eligible to apply for a broadband license, freezing out public utilities who are in need of broadband to fulfill their mission-critical needs and deliver reliable, high quality services to their customers.")

[37] Comments of Hawaiian Electric Company at 6 (stating "To minimize the windfall effect in negotiations and create a fair, competitive environment for broadband licenses, the Commission should phase out SMR licenses upon their expiration and migrate existing operational systems in the SMR blocks to B/ILT").

segment should be focused on incumbent PLMR users, such as energy utilities, whose needs are not being met by consumer-driven, wireless service offerings."[38] Moreover, UTC reiterates that "[w]hile utilities can and do currently use unlicensed operations and commercial communications services to support some of their needs, these tend to be less reliable than using licensed spectrum for private internal communications networks."[39]

UTC agrees with comments on the record by utilities that explain that the premise behind the Commission's decision to favor SMR licensees is fundamentally flawed. As LCRA explained, "[t]he Commission's proposal to limit eligibility for the broadband licenses to incumbents that hold 20 geographically licensed blocks of 900 MHz SMR spectrum is based on mistaken assumptions.[40] Specifically, utility networks like LCRA's are heavily encumbered and SMR networks are underused.[41] "Thus, in certain areas, large site-based incumbents may actually be better positioned to effectuate the relocation to broadband operations."[42] UTC agrees and reiterates that B/ILT licensees are just as qualified (perhaps more so) as SMR licensees to become broadband licensees. Moreover, they could assemble 5 MHz of spectrum by combining their spectrum with those of others (including SMR licensees).[43]

[38] Comments of Duke Energy at 15.

[39] Comments of the Utilities Technology Council in WT 17-200 at 3 (filed June 3, 2019).

[40] Comments of LCRA at 18.

[41] *Id*. at 19 (observing that "In many areas in Texas where all SMR geographic licenses are assigned, they are not all actively in use in the entire region and the SMR licensees do not appear to be providing commercial service throughout their entire licensed areas.")

[42] *Id.*

[43] *See* Comments of UTC at 17.

Accordingly, UTC joins with numerous other utilities that commented in support of the Commission's alternate approach to eligibility that would allow a licensee to use any combination of 900 MHz spectrum (e.g., B/ILT and/or SMR) to be eligible for a new broadband license, provided that such spectrum totals at least 5 megahertz and covers the entire county for which it seeks a license.[44] This would provide additional flexibility to enable utilities and other B/ILT licensees to be able to become broadband licensees either individually or in partnership with an SMR licensee. In this regard, UTC also seeks clarification from the Commission that a utility that acquires spectrum from an SMR licensee on the secondary market may also be eligible to become a broadband licensee.

In any event, UTC reiterates its support for the remaining eligibility requirements that broadband applicants must demonstrate that they reach an agreement to clear from the broadband segment, or demonstrate how they will protect, all covered incumbent licensees, and agree to return to the Commission all 900 MHz licenses for the relevant county, including any site-based B/ILT or SMR licenses.[45] These private agreements should at a minimum provide the details of the mitigation of potential impact such as 1) Replacement of lost narrowband frequency pairs 2) Outline methods of monetary compensations for rebanding efforts and to assist replacement of lost narrowband frequencies and 3) Provide a temporary means of operating on a narrowband basis while guaranteeing broadband licenses to utilities for future operations. UTC believes that it is critical that applicants show that they will either protect all covered incumbent licensees or clear the broadband segment (i.e. relocate them). Incumbent licensees must be protected fully against interference from broadband licensees. UTC also supports the Commission's definition

[44] *Id.* at ¶28.

[45] *Id.* at ¶32.

of "covered incumbents" who must be protected, which must include licensees with systems within 70 miles from the proposed broadband system. UTC does not support using a contour analysis to determine who are or who are not "covered incumbents," because it could lead to manipulation and subjective analysis by the broadband applicant.[46]

VII. Licensing and Operating Rules

A. The Commission Should Adopt Performance Requirements Based on Geographic Coverage.

UTC supports the chorus of comments on the record from utilities that urge the Commission to adopt performance requirements based upon criteria other than population coverage.[47] As several utilities explained, basing performance requirements on population coverage would as a practical matter penalize utilities for deploying broadband systems in remote areas where utilities actually need to communicate with critical assets.[48] Moreover, it makes no sense for the Commission to adopt performance requirements using population metrics when the Commission itself has acknowledged that the 3/3 MHz band will not properly serve direct-to-consumer demand that is provided by broadband wireless service providers.[49] Duke Energy further agrees that this 3/3 MHz band is much better positioned to serve the needs of the current PLMR band users exclusively. As such, UTC reiterates its support for using geographic

[46] *Id.* at ¶33 (inviting comment on alternatives to using a 70 mile separation distance metric, including requiring a prospective broadband licensee to "demonstrate eligibility by clearing incumbents with a service or interfering contour that intersects the county boundary of the prospective broadband license.")

[47] *See* Comments of Duke Energy at 9 ("Duke Energy proposes that the Commission adopt alternative performance requirements based on geographic customer based area coverage over time.")

[48] *See e.g.* Comments of Southern Company Services at 9 (stating that "A substantial amount of the critical infrastructure that would be supported by 900 MHz broadband operations – such as electric transmission lines and generating plants, oil and gas pipelines and refineries, etc. – is intentionally located away from densely populated areas, yet this infrastructure delivers critical public services to hundreds of millions of consumers. Any performance requirements based on the population covered by the licensee's signal would therefore penalize the licensee for deploying the 900 MHz broadband service around the very infrastructure that the service is intended to support.")

[49] *See* Comments of Duke Energy at 9.

coverage as the metric for performance requirements. Alternatively, and for similar reasons, UTC also supports the Commission's proposal to allow utilities to meet their performance requirements by demonstrating narrowband operations for Narrowband Internet of Things (NB-IoT).[50]

B. The Commission Should Adopt Interference Criteria Based on Rules for the 800 MHz Band and Adopt Technical Rules to Protect Against Adjacent Channel Interference.

UTC reiterates its support for using the same interference criteria in the 900 MHz band as the Commission has used in the 800 MHz band, which defines unacceptable interference as a median desired signal strength of -104 dBm or higher as measured at the radiofrequency input of the receiver of a mobile unit, or -101 dBm or higher as measured at the radiofrequency input of the receiver of a portable station. Comments on the record also support using the criteria from the 800 MHz band unacceptable interference. UTC submits that applying the interference criteria from the 800 MHz band here would be more appropriate because it more closely aligns with the interference environment and the configuration of the band that the Commission proposes through realignment of the 900 MHz band. That is to say, by separating the narrowband and broadband segments from each other in the 900 MHz band, the Commission should adopt the same interference criteria that it developed for the 800 MHz band after it was segmented into separate narrowband and broadband parts of the band.

Finally, UTC reiterates its support for rules to protect against adjacent channel to Narrowband PCS operations (e.g. Sensus meters).[51] Specifically, UTC echoes the comments on the record that support the Commission's proposal for a 500 kHz guard band. That said, UTC

[50] *Id.* at ¶63.

[51] *Id.* at ¶74.

and other parties are concerned that the FCC has not provided narrowband systems within the 900 MHz band with similar protection.[52] Accordingly, UTC urges the Commission to develop innovative solutions that would provide just as much interference protection for narrowband systems within the 900 MHz band as it is proposing to provide for Narrowband PCS systems adjacent to the 900 MHz band.

UTC also reiterates its support for the use of an adjacent channel interference metric using 43 + 10 log (P) dB for uplink operations in the 897.5-900.5 MHz band and by at least 50 + 10 log (p) dB for downlink operations in the 936.5-939.5 MHz band.[53] UTC believes that adjacent channel interference rules are necessary in addition to out-of-band emission limits to protect narrowband operations in the adjacent narrowband segments. This allows narrowband licensees to complain if they experience adjacent channel interference, notwithstanding compliance with the out of band emission limits.

Respectfully,

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[52] *See e.g.* Comments of LCRA at 22 (urging the Commission "to adopt a guard band between the narrowband and broadband operations in the 900 MHz band if it proceeds with realignment to create broadband licenses," and proposing that "the new broadband segment be located at the lower segment of the band beginning at 896 MHz, with a guard band between the broadband and narrowband segments.")

[53] *Id.* at ¶76.